

Patent Claims

1. A cooling system for devices comprising power semiconductor components (1), the power semiconductor components (1) being arranged on printed circuit boards (4) arranged in plug-in contact strips (7) of a superordinate circuit carrier (10), the cooling system having a cooling plate (11), which is mounted in a pivotable manner on a plug-in contact strip (7) in a region of one of the power semiconductor components (1), and which can be pivoted about an axis (14) parallel to the plug-in contact strip (7), and which has a first mounting and maintenance position (W) pivoted away from the power semiconductor component (1), and which has a second cooling and operating position (K) pressed onto the power semiconductor component (1).

2. The cooling system as claimed in claim 1, characterized in that the cooling plate (11) has cooling fins on the cooling plate side (15) not in contact with the power semiconductor component (1).

3. The cooling system as claimed in claim 1 or claim 2, characterized in that the cooling plate (11) has cooling grid structures (16) fitted on its edge sides (20, 21).

4. The cooling system as claimed in claim 3, characterized in that the cooling grid structures (16) cover the remaining adjacent semiconductor components (17) of a printed circuit board (4).

5. The cooling system as claimed in claim 3 or claim 4,

characterized in that
a cooling grid structure (18) is arranged at the upper
edge side (19) of the cooling plate (11) and projects
beyond an upper edge (25) of the printed circuit board
5 (4) and into a cooling air stream L.

6. The cooling system as claimed in one of the
preceding claims,
characterized in that
10 a cooling air stream device that generates a cooling
air stream (L) is arranged in such a way that it has a
forced cooling (Z) parallel to the plug-in contact
strips (7) of the device to be cooled.

15 7. The cooling system as claimed in one of the
preceding claims,
characterized in that
a cooling air stream device that generates a cooling
air stream (L) is arranged in such a way that it has a
20 forced cooling (Z) perpendicular to the plug-in contact
strips (7) of the device to be cooled, into which
forced cooling project cooling grid structures (18)
connected to the cooling plate (11).

25 8. The cooling system as claimed in one of the
preceding claims,
characterized in that
the cooling system has two cooling plates (11) which
are opposite one another and which are arranged in a
30 pivotable manner on a plug-in contact strip (7) in the
region of a power semiconductor component (1).

9. A method for cooling a device having power
semiconductor components (1), the method having the
35 following method steps:

- mounting pivotable cooling plates (11) onto plug-in contact strips (7) in the regions of power semiconductor components (1) in a first mounting

- and maintenance position (W),
- fitting printed circuit boards (4) with power semiconductor components (1) on the plug-in contact strips (7) and pivoting the cooling plate (11) about an axis parallel to the plug-in contact strip (7) into a second cooling or operating position (K), in which the cooling plate (11) bears on the power semiconductor component (1),
 - orienting a device generating a cooling air stream, such that the cooling air stream (L) flows parallel or perpendicular to the plug-in contact strips (7, 8, 9),
 - providing the cooling air stream (L) during operation of the power semiconductor components (1) in the event of a critical temperature of the power semiconductor components (1) being reached.